

THE HUDSON BAY RAILWAY

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THE HUDSON BAY RAILWAY



What Is the Truth in this
Important Matter

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Conflict of Opinion.

THERE can be no doubt that a sharp division of opinion exists as to the merits of the Hudson Bay Railway. The West believes in it. The East does not. It is not sufficient to say that the West takes a selfish view and has jumped to conclusions, nor that the East, lacking direct interest, has not looked into the matter sympathetically. We get nowhere while clashing goes on along those lines. Nor do we make progress when someone says: "All opposition comes from a group of Montreal capitalists who want to run the country", or something of that sort. As rational Canadians, we should all want to know the truth; and the purpose of this analytical review is to examine the matter from every angle in a judicial spirit.

In thus alluding to the West, it must be understood that neither the Legislature nor the United Farmers of Alberta has endorsed this project.

The writer is absolutely independent. He knows nothing about the alleged group of Montreal capitalists and cares less. He is simply a student of railway economics, who has given ten years of close study to this specific problem, uninfluenced by anybody or any consideration but the truth. Back of that ten years of study lies thirty years of direct and indirect contact with the transportation interests of Canada and the world at large. He has not been asked to prepare a brief in the matter, and is therefore not answerable to any interest nor master for the views he may express.

The Western Attitude

Popular judgment in Saskatchewan, Manitoba and sections of Alberta is strongly in favor of completing and operating the Hudson Bay Railway. The attitude of these people was well and succinctly stated by Mr. Andrew Knox, M.P., in a speech made to Parliament on 4th May last. He said:—

"We who are pressing for the completion of the Hudson Bay Railway believe implicitly in the feasibility and in the future success of that project and in that conviction we have no need to feel apologetic. We represent hundreds of thousands of people in the West who to-day are equally confident of the feasibility and the successful operation of this railway; and they believe in it as a possible outlet for their produce and as an inlet for their purchases. These people believe that it would overcome the great handicap under which the West is to-day suffering by reason of high transportation costs.

"The people of the West, however, believe in the justice of completing the Hudson Bay Railway; and more than that, they believe in the righteousness of it, if I may put it that way; many of them believe that the Hudson Bay was placed as it is by the all-wise Creator for the purpose of serving as an outlet for the great agricultural plateau of the middle west. The people in that part of the country are of the opinion that it would do more towards bettering conditions in the West, if this railway were completed, than any other transportation project could accomplish. The result of all this is that those who inhabit the three prairie provinces are practically a unit in their request for the immediate completion of the Hudson Bay Railway."

No one who is familiar with popular conviction in the West would feel that Mr. Knox had over-stated the case. The people of the prairie provinces believe as he has said they do. And that belief is entitled to respect. They will not change their belief on merely being told that they believe in a nightmare. Western advocacy of the Hudson Bay Railway might well be said to have its foundation in six convictions:—

1.—That the Hudson Bay route is about one thousand miles shorter than the present route between the prairies and Liverpool.

2.—That the cost of completing the road, now partly built, and putting it in operation would be relatively small—say from \$3,000,000 to \$7,000,000.

3.—That Hudson Straits are navigable for from three to five months each year.

4.—That the favorable difference in distance would be reflected in a proportionate lowering of transportation charges on wheat.

5.—That every dollar saved through lower carrying tolls would go directly into the pockets of western grain growers.

6.—That the railway could be operated economically, with westbound as well as eastbound traffic, and that it could be made self-sustaining.

If these opinions, or convictions, are sound, then it is the plain duty of Government to complete the Hudson Bay Railway with all possible expedition and put it in operation. The East should at the same time cease all opposition. On the other hand, if these opinions are unsound and unjustified, the West should bow to the force of reason. Let us therefore calmly and judicially look at the matter on its merits. In other words, let us honestly try to get at the truth.

An Economic Issue

This is not a sentimental matter. It is a stern economic problem, and must be dealt with on accepted economic principles. Provided enough money can be had, a railway may be built between any two points. That is a proverb in railroading. But building a railway is one thing, and having it serve a useful purpose is quite another. It is true, a railway may be of considerable use and yet be a commercial failure. Its capital cost, for example, might be greater than its earning power. To be successful it has got to have adequate traffic and adequate rates. It has also got to be efficiently administered. In other words, there are a number of economic factors which come into play, and they must all co-ordinate.

This matter cannot be settled by parties of laymen going out to Hudson Bay. They do not see there the intensely grave economic problems which lie at the base of this matter, nor can they see the conditions in Hudson Straits.

The Shorter Route

There is no need to waste a moment of time in arguing about the attractiveness of the Hudson Bay route from the standpoint of geographical shortness. It would undoubtedly cut down the distance between a typical wheat shipping point like Regina and Liverpool by about 775 miles. All points nearer to Fort William than is Regina would, however, be less favorably affected, except possibly

some of those in Northern Manitoba. Southern Manitoba could not be materially helped in the matter of distance from the export market.

Here is a short table of comparative mileages between inland shipping points and Liverpool by way of Hudson Bay and Montreal.

	By Port Nelson	By Montreal
Saskatoon.....	3,716	4,676
Prince Albert.....	3,636	4,777
Regina.....	3,889	4,657
Brandon.....	3,811	4,427
Winnipeg.....	3,878	4,302

But nearness to market may easily be offset by other conditions. For example, it might pay a manufacturer to operate a thousand miles away from his consuming market if the adverse factor of distance were more than made up by lower cost of production at the remote point. That consideration arises in this case. A railway is engaged in producing and selling a certain service. The cost of producing that service under one set of conditions may be much greater than under another. We shall look into that aspect of the matter, as it applies to the Hudson Bay Railway, a little further along. It is very important.

In comparing the Hudson Bay route with the present Montreal route, it should be remembered that 514 miles of the latter is by water, at rates lower than those which obtain on the Atlantic. The tolls between Fort William and Montreal were $8\frac{1}{2}$ cents per bushel in November, which includes all loading and unloading charges. Moreover, since this road could have traffic for but one way, the factor of distance to Liverpool is at once reduced by 424 miles.

The Cost of Completion

How much would it cost to lay rails on the remaining 92 miles, build necessary sidings at every 10 miles, construct station buildings and water service, provide motive power and rolling stock sufficient for a line of 424 miles, complete the harbor at Port Nelson and other necessary terminal facilities, build an elevator of sufficient capacity, and establish in Hudson Straits the aids which are inseparable from navigation? The estimates have varied very widely. Mr. Knox speaking for western opinion, said:—

"My proposal is that they take half of the \$15,000,000 which appears in the estimates for the Welland canal and apply the money to the Hudson Bay project; for this amount would be far more than sufficient to bring it to the stage where it could function successfully."

That was very much the highest estimate offered to Parliament during the session of 1925. If these members had taken the trouble to look at Returns Nos. 234 and 234A, brought down in 1924, they would have found there a calculation made by the Resident Engineer of the Hudson Bay Railway to the Department of Railways and Canals, and dated February 6, 1923, as to further expenditures necessary. His estimate was as follows:—

Dredging at Port Nelson.....	\$ 6,255,000
Dock, 4,000 feet long.....	7,116,000
Elevator, 7,000,000 bushels.....	8,400,000
Port equipment, lighthouses, etc.....	300,000
Completion of H.B. Ry.....	5,000,000
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	\$27,071,000

These are the figures of the engineer who has for years been in charge of the work at Port Nelson. They must be accepted with qualification, however. In the entire history of construction work of this nature it has never in a single instance been possible to come within the primary estimate. And there is a further point of great importance. Mr. McLachlan, the Resident Engineer has made no provision for motive power and rolling stock, aids to navigation in Hudson Straits, and for still another large expenditure. In his official report, dated December 1, 1922, he says: "The ties in the first 264 miles north of The Pas have been in place for nine years, and are so rotten that unless something is done toward their replacement, the present heavy locomotive and standard cars operated on this section of the line will some day leave The Pas and never return". As a matter of fact, the ties on the entire 332 miles of completed road are by this time absolutely useless and must be replaced. That would cost \$1,112,000, and raise Mr. McLachlan's estimate to \$28,183,000.

It would require at least 50 locomotives and 1,200 cars, representing a capital outlay of over \$16,000,000, to handle no more than 400,000 bushels per day.

In various reports, it has been taken for granted that ships of special construction, suitable for operation under heavy ice conditions, will be built and maintained by Government. As Mr. McLachlan's duties did not extend to that field, he omits all calculations as to the cost of ships. As far back as 1914, however, Hon. Frank Cochrane, Minister of Railways and Canals, after sending several expeditions to investigate the situation in Hudson Straits, informed the writer he had definitely decided that Government would have to build and operate ships of special design and strength. We must therefore revise Mr. McLachlan's figures as follows:—

Mr. McLachlan's estimate.....	\$27,071,000
New ties on 332 miles.....	1,112,000
Cost of ships.....	20,000,000
Aids to navigation.....	250,000
	<hr/>
	\$48,443,000

Inasmuch as \$20,859,318 has already been spent on the road, (see Public Accounts for 1924, page 9) without taking interest charges into account, we have here a final total of \$69 302,318. The charge for taking up old and laying new ties is at Manitoba rates. It would probably be from 100 to 150 per cent higher north of Le Pas. The estimate for ships would provide not more than 12 or 13 units, whereas, if only vessels of special construction were used—as would seem to be necessary—fully 45 would be required to transport 24,500,000 bushels during a season of two months. So that no attempt at exaggeration is being made.

The Season of Navigation

The most conflicting testimony has been given as to what might be called the season of navigation through Hudson Straits. Obviously, that is the key to the entire situation. There have been men who placed it as high as five months; but it is only fair to say they were not referring to a regular commercial service. They made it clear that they meant it might be possible to get in or out, using a small whaler or ice-breaker, in some years at any time between 1st July and the end of October. But a commercial route is a totally different matter. Other men, whose judgment is entitled to much greater weight, have unhesitatingly declared that the conditions as to ice at all seasons are so serious that the ordinary ship of commerce could not operate in Hudson Straits at all. It might get through with perfect safety at certain periods in certain years; but, taking

one year with another, the constant presence of large bodies of ice, with a shifting channel, take Hudson Straits completely and positively outside the range of a practicable route for vessels of the ordinary type.

Nor could even specially constructed ships be sure of providing a regular service in all years. Winds and currents block Hudson Straits with very heavy ice at all seasons of the year; and fogs and snow-storms occur frequently during what is regarded as the "open season." Tremendous bodies of ice are always there.

The Resident Engineer of the Hudson Bay Railway places the season of navigation from 20th August to 20th October. No one has ever put it later than the end of October. We must, however, look at this route from the standpoint of available traffic. It is to be a channel for export wheat. So long as there is no doubt as to the date of the closing of the straits, it makes little difference how early they may be open. Harvesting conditions fix the date at which wheat could reach Port Nelson. We need not guess about that. Forty years of experience has clearly demonstrated that wheat could not possibly reach Port Nelson earlier than the end of August.

All western wheat that does not go out by way of Vancouver comes down to the head of lake navigation at Fort William. Whatever wheat goes out by the Pacific route could not possibly be available for Port Nelson. Let us therefore look at the facts of this east-bound movement. In 1924 the volume moved out of Fort William by water was 200,543,660 bushels. Of that, the shipments by months were as follows:—

	Bushels
August.....	9,556,371
September.....	9,026,256
October.....	28,651,979
November.....	32,302,170
December.....	28,451,877

If the Hudson Bay Railway had been in operation in 1924, and had secured the hauling of every bushel of wheat available between 1st August and 15th October, it could have moved but 32,908,616 bushels, or less than 17 per cent of the total. Since, however, the Resident Engineer of the road has worked out its maximum capacity

for the whole season at 24,500,000 bushels, we need not speculate any further along that line.

The writer has taken the trouble to get the facts as to wheat movement. Taking one year with another, 75.4 per cent of the season's crop is moved to Fort William between 1st September and 1st December. That fact must come into the reckoning.

The Question of Rates

We may well consider concurrently the two western beliefs that the shorter distance to Liverpool would be reflected in proportionately lower transportation tolls, and that this difference in tolls would go directly into the pockets of prairie grain growers. If the first belief is sound, the second follows more or less logically, although economists are not agreed on the doctrine that the western wheat producer pays the freight both on what he buys and what he sells. However, it is not proposed to introduce any arguments on that point here.

A reasonable basis must be found as a starting point for the discussion of this vital question of whether or not transportation tolls on wheat could be lowered if the Hudson Bay Railway were in operation. The following four points should be acceptable to everybody:—

1.—That the total volume of traffic must earn the cost of operating and also interest charges on invested capital. A margin for contingencies would also be necessary.

2.—That the road would be almost wholly dependent for east-bound traffic on the season's crop, and would therefore be idle for from nine to ten months each year.

3.—That traffic earnings for the operating period of from two to three months would have to carry all costs for the full year.

4.—That sound business considerations demand the rates should be sufficient to cover the three preceding points and enable the road to be self-sustaining.

The grain growers of the West do not want the Hudson Bay Railway because there is a shortage of transportation facilities. As a matter of fact, there is a very large excess of railway mileage in the

western provinces. They want this road because they believe it will give them lower rates. Let us therefore go carefully into the facts to see whether or not any grounds exist for hope in that regard.

If length of haul were the controlling factor, and all other factors were normal and equally favorable, then western expectations rest on a solid and sound foundation. It happens, however, that all the other factors are exceedingly abnormal and adverse. They are as follows:—

1.—This road is going to cost more, comparatively, than any other road ever built in Canada. It will undoubtedly cost more than \$115,000 per mile, due in large measure to the expensive character of the eastern terminal at Port Nelson.

2.—Certain necessary maintenance charges, which go on the year round, must be earned during the short season of operation. There is no parallel for this in railway history. It is a very serious drawback.

3.—Owing to peculiar conditions, which will remain more or less constant, operating costs will be from 80 to 200 per cent above those which obtain elsewhere in Canada.

4.—The traffic will be practically all eastward; so that the haul, in its bearing on rates, must be reckoned as being 848 miles rather than 424. The same disability applies to the ships.

5.—There will be no local traffic of any consequence. What business may arise will probably be carried at a heavy loss.

It is not at all difficult to calculate the probable revenue of the Hudson Bay Railway. It is to be a medium for the transport of wheat, and the Resident Engineer at Port Nelson has gone to a great deal of trouble to work out the volume that could be handled. He places the maximum for a single season at 24,500,000 bushels.

If all the conditions of operation were ideal, it is conceivable that the road could handle more business than that. The Canadian Pacific line between Winnipeg and Fort William is almost an exact parallel to the Hudson Bay Railway as to length. It is 420 miles long. The Hudson Bay Railway is 424 miles long. The writer has taken the pains to find out what was the absolute capacity of the

road between Winnipeg and Fort William when it was a single-track line. At the period of highest pressure, which is in October and November, 816,200 bushels were delivered at Fort William in a single day.

At that rate, the Hudson Bay Railway could handle 48,000,000 in sixty days. But we must see at once, that such a performance could not be duplicated by the Hudson Bay, except during 20 days in October; for the sufficient reason that 816,200 bushels of wheat per day would not be available between 20th August and 20th September. Neither the Canadian Pacific nor the Canadian National has ever averaged half that volume up to 20th September. We must be guided by facts in such a matter.

The Resident Engineer was therefore quite within the mark when he placed the capacity of the road at 24,500,000 bushels for the season of operation. It makes no difference if other traffic were available. The maximum service has been reckoned in terms of wheat and any other business would merely displace grain. The question which must next be answered is as to the earnings from that volume of traffic. It offers no difficulties.

The present rate on wheat from Saskatoon to Fort William, a distance of 900 miles, is 24 cents per 100 lbs., or \$4.80 per ton. Each ton would represent 900 ton miles. Dividing that number into \$4.80, we have the rate as being .533 cent per ton-mile, or a little over half a cent. The average ton-mile rate on all commodities carried by Canadian railways in 1924 was 1.019 cents; so that, while wheat is moved in trainloads, and is subject to low handling charges, this rate of .533 per ton-mile is probably very close to actual cost. The point is neither important nor relevant in this connection.

Taking the Resident Engineer's figures of 24,500,000 bushels, and, translating them into ton-miles, our total is 311,640,000. At this rate of .533 cent per ton-mile, the gross receipts from eastbound traffic would be \$1,661,041 per annum.

Only one other factor as regards earnings comes in. It seems to have been assumed that there would be considerable westbound traffic. The Resident Engineer estimates it at 150,000 tons per annum. He was wrong. The writer has had imports from Europe to western Canada carefully examined, and he has also got the facts

in that regard from the railways. They have never reached 7,000 tons in a single year. Without estimating how much of that volume would reach the Hudson Bay Railway during its short season, if any, the entire 7,000 tons is brought into the reckoning, and at double the rate on wheat. The amount in revenue would be \$67,200.

We now have the total earnings of the Hudson Bay Railway for the season at \$1,728,241. Let us see at once that more than every penny of this would be consumed by interest charges on capital liability—without bringing in the cost of ships. Whence would operating expenses come? These the Resident Engineer reports would be 80 per cent higher than in other parts of Canada.

The Resident Engineer of the Hudson Bay Railway made several official reports to the Department of Railways and Canals on this subject of comparative rates. He goes carefully into all the factors of cost per long ton, and shows that while it now costs \$12.17 by the present route, between a point like Humboldt and Montreal, and would cost \$10.96 when the new Welland canal is completed, the cost by way of Port Nelson would be \$12.63. He therefore concludes that "as a grain route, the Hudson Bay Railway is no value to Western Canada". (See pages 40 and 41 of Parliamentary Return No. 234 for 1924.)

At page 48 of the same Return, the Resident Engineer makes careful calculation of the cost of moving wheat from Saskatoon to Montreal, and concludes as follows:—

"From the above it appears that grain can be delivered to a ship in Montreal more cheaply than to a ship at Port Nelson after the Welland canal is finished."

The difference in favor of Montreal, according to Mr. McLachlan's calculation, would be 5.35 cents per bushel. At the end of this review his report is given in full.

The Common Sense Test

We have seen that the maximum earnings of the road would be \$1,728,241 per annum. That sum must equal operating expenses and all other factors of cost, including interest on capital investment. And at that point it is necessary to apply the cold test of common sense to figures which everybody can understand. The crucial

question is this: What would be the operating expenses and fixed charges? Mr. D. W. McLachlan, the Resident Engineer, at page 40 of the Return brought down to Parliament in 1924, says:—

“The operating cost per ton-mile, north of Le Pas on the Hudson Bay Railway, may be taken at 80 per cent advance on the rates used in other parts of Canada.”

If that be true—and it cannot be questioned—then at one stroke the entire bottom falls out of the Hudson Bay Railway as a project which could serve the western grain grower in the matter of lower rates. But we need not bring Mr. McLachlan's statement into the calculation at all. If operating expenses were identical with those in eastern Canada, we should still find that income and outgo could not be made to balance. Take fixed charges alone. The capital outlay to date has been \$20,859,318, and the engineer estimates that \$27,071,000 would be required to put the road in operation, leaving all consideration as to ships and so on aside. This total capital liability of \$47,930,318, at 4 per cent, would more than eat up total gross receipts—assuming that present freight rates were applied.

Leaving interest charges out of the calculation entirely, and looking at operating expenses alone, here is a controlling fact which would not occur to the mind of the layman: Operating expenses are not created solely by the running of trains. In 1924 transportation represented but 48 per cent of total operating cost. There must be a business and operating organization on all railways. They do not run themselves automatically. But it may be assumed that the Canadian National would administer the road without the addition of a single dollar of expense under that head; and that point will therefore be dropped. It only affects the total by 7 per cent. The other 45 per cent cannot possibly be avoided, whether the road is idle or not. This view will be supported by every railway operator in the world.

Maintenance of way and structures must go on, whether trains are being run or not. If the line is to give its maximum of service, the roadbed must be kept in shape; and that is an annual expenditure on a mileage basis. On all Canadian railways, considered as a group, it amounted to \$1,948 per mile in 1924. Ties and rails wear out. Ballasting must be done. It takes so many men to a section



July 20th—It will be seen that such ice conditions utterly prevent navigation by ordinary vessels.



These were the conditions on July 22nd. The ice is "rafted" and from 10 to 20 feet in thickness.



These are ice breakers forcing their way through heavy ice in August, 1914.



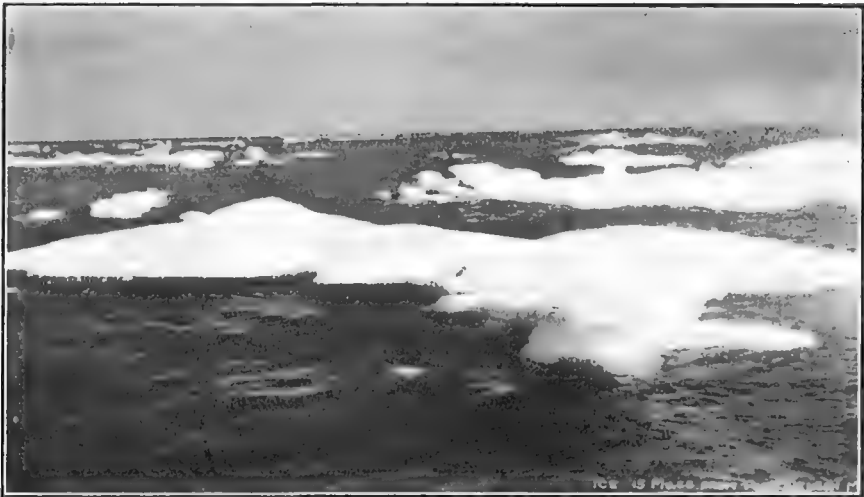
Photo taken 12th August, 1914. A ship is being convoyed by an ice-breaker, which is very slow work.



Another picture taken in August. These are the conditions in what has been called "the open season" of navigation.



Still another August scene in the Straits. Note the thickness of the ice, five-sixths of which is under water.



This is a photo of ice conditions not far from Port Nelson on 9th September.
What must have been the situation in the Straits at that time?



October 25th in the Straits. By that date the entire channel is covered with
exceedingly heavy ice and icebergs.

of five miles to keep any railway fit for operation. If the Hudson Bay Railway cost no more for maintenance of way and structures than the average of all Canadian railways, it would have to provide \$825,952 per annum for that purpose for its 424 miles of line. Inasmuch as Mr. McLachlan says that labor costs on the Hudson Bay Railway are from 100 to 300 per cent higher than in eastern Canada, it is conceivable that the mere expense of keeping the roadbed in operating condition would be equal to total revenues.

Unavoidable charges of this class attaching to Canadian railways in 1924, irrespective of capital liability, were over \$3,000 per mile. They would have had to be paid whether the roads were in operation or not. The same inexorable law applies to the Hudson Bay Railway. The upkeep of roadbed is merely one of the charges from which there is no escape. There are hundreds of others.

A parallel to the cost of keeping up the Hudson Bay Railway would be found in the case of a hotel which, although open for but two months in the year, had to maintain a third of its staff for the full year. The guests during the two months of operation would have to pay for that unproductive outlay, or it would be a loss.

If it be assumed by the advocates of this road that the Canadian National would supply all required equipment, they must re-consider that matter. The Hudson Bay Railway would be in operation at the very period that the Government system would need every locomotive and wheat car it owns. Therefore another big outlay on the capital side must be brought into the reckoning.

Port Nelson is not a natural harbor. A ship of ordinary draft cannot get nearer than twenty miles of the wharf. This means very heavy and costly dredging. Owing to enormous siltage from the Nelson River every spring, the artificial channel made one year is completely filled up the next. There is not a shadow of doubt about that. It appears in many of the Resident Engineer's reports. It is unreasonable to ignore a factor of that gravity in connection with the railway.

Having reached this point in the consideration of certain factors which govern rates, it becomes unnecessary to argue any further the question of the shortness of the Hudson Bay route as compared with the existing route. That favorable factor passes completely out of the reckoning in the face of other and outweighing factors.

Who Would Benefit?

What measure of service could the Hudson Bay Railway render to the West? That brings the whole proposition down to the final test, because it introduces the factor of individual interest; and that view cannot be excluded. It is obvious that every prairie farmer who favors this road believes he would be benefitted by it. Let us see

The western wheat crop of 1925 is placed in the Royal Bank bulletin for November at 400,385,000 bushels. We have just seen that the engineer in charge of the Hudson Bay Railway has officially estimated the maximum capacity of the road at 24,500,000 bushels. If the road had been in operation this year, it is as clear as day that 375,885,000 bushels of the season's crop could not possibly have been affected one way or the other as to transportation tolls on that route.

Who would determine, and how, what wheat should go out by the proposed new route? At the moment of shipment, export wheat is no longer the property of its producer. It belongs to the man who has bought it. Assuming that the Grain Growers' Association would deal with the situation, and that they would distribute the lower Hudson Bay rates—if any one now believes they could be lower—over the whole pool, how much would each producer benefit?

Of course, after having shown that rates could not possibly be lower, the foregoing question loses all practical significance. But the broad question of the measure of service possible by the Hudson Bay Railway remains. It goes to the roots of the entire proposition.

The purpose for which the Grain Growers' Association was organized, namely, to pool wheat in order to market it under the most favorable conditions, might easily stand in the way of using the Hudson Bay Railway to its full capacity during the short season it would be in operation. That is very clearly something to think about.

A Summing Up

In all that has thus far been written an earnest and sincere attempt has been made to measure this proposition on its economic merits. If it does not stand up under the tests which have been applied, then there is but one conclusion.

It will be observed that not a word has been said having a political bearing. The writer is not concerned about that aspect of the matter. He is equally unconcerned as to the views of the two large railway systems. Yet a word about one of the latter cannot be avoided. The Canadian National has been making a brave struggle to get on its feet. It faces tremendous obstacles. Let us, therefore, frankly recognize that every bushel of wheat carried by the Hudson Bay Railway would be one bushel less for the Canadian National or the Canadian Pacific.

There is also the unavoidable thought that the people of Canada are carrying an exceedingly heavy burden in debt and taxation. Every dollar of loss incurred through the failure of the Hudson Bay Railway to pay its way would add to that burden.

Two conclusions are indicated by the facts and arguments which have here been presented. They are:—

1.—That the Hudson Bay Railway cannot carry a sufficient volume of traffic to materially benefit the wheat growers of the West, even though the rates should be lowered in proportion to the favorable difference in distance as between the proposed route and the route now in use.

2.—That there are insurmountable physical and economic obstacles in the way of operating that railway at a cost which would not mean rates several times higher than those which now obtain.

The Hudson Bay Railway would be like no other railway on earth. It would have a terminal which was closed for from nine to ten months in the year. That fact alone should tell every man who pauses to think that such a railway would be operated under exceedingly abnormal conditions. Therefore, extraordinary tests must be applied to it. It cannot, in other words, be measured against a normal railway. Yet we must all frankly see that every factor of abnormality is adverse in its bearing on the proposition as a whole. They all show conclusively that, if the railway is to pay its way, rates would have to be enormously high.

A Startling Confession

Mr. D. W. McLachlan took up his work as Resident Engineer at Port Nelson on 6th August, 1913. Four years later he made the following report:—

PORT NELSON, MAN., September 17, 1917

W. A. BOWDEN, Esq.,

Chief Engineer, Department Railways and Canals,
Ottawa, Ont.

DEAR SIR,—Many a time during the past four years I have been on the verge of coming out in absolute condemnation of the undertaking on which I am engaged, but so long as I thought there was a chance of the Hudson Bay Railway ever proving of value for any national purpose, I thought that I had better not do so, especially as I know that you have always been one of its staunchest supporters. In the light of the ice conditions of this year, which I observed carefully on August 13, 29 and September 6, in the entrance to Port Nelson and the operation of our ships to and from Port Nelson for the past five seasons, I have come to the conclusion that the season for tramp steamships on this route is going to be so short that the cost of doing every item of work in the handling and transporting of merchandise is going to be so great that the route is not going to be able to compete with the lake route to Georgian Bay and rail to Montreal.

Port Nelson was this year blocked with ice on August 29, and there was still ice around the harbour entrance on September 6, proof of which I inclose.

The *Sheba* altered her course twice on the 12th of September to avoid ice within one hundred and fifty miles of Port Nelson. Though this year is extremely late as regards ice, yet it is quite usual to meet ice in the vicinity of Cape Tatnam until September. The extreme season will count in a commercial route. I also feel that we cannot extend the latter end of the season beyond the date on which our ships have been leaving in recent years, which means that the 15th of October will terminate commercial navigation, unless aeroplane reconnaissance of the Fox Channel ice floes brings to light something now unknown.

Assuming for argument as long a season as can be hoped for, viz., two months between arrival of first ship at Port Nelson and departure of the last ship, I find that the Hudson Bay Railway route could not offer a greater rate to tramp steamers to come to Port Nelson than would be required to induce them to go to Montreal, and I feel that under equal rates the tramp steamer will prefer to go to Montreal rather

than to Port Nelson when sailing to or from a European port.

For your perusal I have prepared the following table, showing cost of transporting grain from Saskatoon to Liverpool via Fort William:—

Saskatoon to Fort William, 917 miles at $4\frac{1}{2}$ mills per ton mile.	12.4¢ per bushel
Transfer at Fort William.	
Interest on cost of elevator and dock space at 6 per cent, handling its capacity seven times in season at 45 and 35 cents per bushel first cost $\frac{80 \times 6 \times 1}{100 \times 7}$	0.7¢ per bushel
Labour and operation of elevator. Average of Port Colborne and Montreal.	0.3¢ per bushel
Lake boat transport, Fort William to Bay Port, September rate.	1.5¢ "
Transfer at Georgian Bay port, same as above.	1.0¢ "
Rail haul to Montreal—	
Present C.P. Ry. line from Port McNicol, 375 miles at 4 mills per ton mile, or C.N. Ry. line to Key Harbour to Montreal proposed, 401 miles at $3\frac{1}{2}$ mills per ton mile.	4.5¢ "
Transfer at Montreal.	1.0¢ "
Ocean voyage pre-war rates.	5.0¢ "
Insurance omitted.	
	<hr/> 26.4¢ per bushel

As a comparison with the above I have prepared the following table showing costs of transporting grain from Saskatoon to Port Nelson. The rate via Hudson Bay Railway would be as follows:—

Saskatoon to Port Nelson, 730 miles at $6\frac{1}{2}$ mills per ton mile.	13.8¢ per bushel
Transfer at Port Nelson—	
Elevator and dock space each 70¢ per bushel.	
Interest on cost of above space handling capacity $\frac{70 \times 6 \times 1 \times 2}{100 \times 2}$	4.2¢ per bushel
Forward.	<hr/> 18.0¢ per bushel
Labour power and operation of elevator double lake costs.	0.6¢ "
Interest on cost of $\frac{1}{3}$ grain delayed three months, value \$1.00 per bushel at $\frac{8 \times 3 \times 2}{100 \times 12 \times 3}$	1.3¢ "
Total above.	<hr/> 19.9¢ per bushel
Margin left for ocean voyage, extra insurance and interest on cost of works = $26.4 - 19.9 = 6.5$ ¢ per bushel.	

The ocean rate from Montreal is generally a liner rate, not a tramp rate. When a tramp rate is quoted it is usually two cents in excess of the liner rate.

In the figures given I have assumed that it will always cost twice as much to furnish the labour to handle a cargo at Port Nelson as it will cost to furnish the labour to handle a cargo in Fort William or Montreal, and I also assume that the operating cost per ton mile on the Hudson Bay Railway will be 40 per cent higher than a railway between Saskatoon and Fort William, both on account of the increased price of fuel and the shortness of the season, which I consider must synchronize with navigation from Port Nelson to Europe. I can prove that I am within the mark in many ways. If a man is brought here for two months' work as much will be paid out for transportation, wages and time as there is for work done, provided no higher rate is paid than in Fort William and there is in addition the cost of assembling and disbanding the organization. Though transportation on these works has amounted to 28 per cent of the pay-roll, yet there is also a large amount of overhead charges carried by other accounts in the nature of waiting for the season and other things. The construction season here has been nearly three times as long as the operating season will be and one of the embarrassments of the future construction work will be the absence of work in April and May. The very thought of bringing together an organization to operate a port for two months with no other diversion but the loading of irregular ships and then disbanding again as abruptly is, of itself, a most difficult task and its cost will be very nearly the cost of a similar organization elsewhere if operated for their season. The stationman on the Hudson Bay Railway makes \$10 per day for 90 days and does nothing the rest of the year. Our men here do nothing outside from November to April, and so it will be for all time.

If you have any doubts re this matter, think of our experience with the stevedore. Time in, time out; transportation in, transportation out; and ten hours when there are no ships.

I have no longer any hesitation in saying the Hudson Bay Railway is doomed to certain failure. There may be fish in Hudson Bay, but there is no fishing season. There may be minerals on the east coast, but they are as accessible from Halifax as from Port Nelson. There is nothing for the Hudson Bay north of the Huronian rock outcrops south of Split

lake, so long as the St. Lawrence river route is available, and as for agricultural possibilities north of the same point, there are none.

Yours very truly,

(Sgd.) D. W. McLACHLAN.

The Question of Ships

The water end of this transportation scheme is pivotal. If Hudson Straits are not navigable, even for two months, then the railway would not be of any use. If they are navigable for a short period each year, two questions at once arise: First, Could the ordinary ship of commerce, or tramp, be utilized? and second, If the ordinary tramp steamer could not be used, how many vessels of special construction would be required?

One fact has been established beyond all reasonable doubt. It is that Hudson Straits present enormous obstacles to navigation at all, to say nothing about safe navigation. No such body of water is navigated in any part of the world. On every day during what is called the "open season" it is a question of finding a channel through the ice; for tremendous bodies of ice are always there. Sometimes a channel can be found many miles in width. Nearly always, the opening is narrow and tortuous. It is constantly shifting. Growlers, such as sank the *Titanic*, are never absent, nor are icebergs. Everywhere, however, is floating ice of the heavy polar variety, running from 10 to 40 feet in thickness. To add to the difficulty, fogs and snowstorms are frequent, and occur at all seasons.

In the face of such terrible conditions, two conclusions are justified. They are:—

1.—That the ordinary steamer of commerce would be compelled to keep out of such waters, if for no other reason than that insurance rates would be prohibitive. They would also be enormous in the case of government owned vessels.

2.—That navigation would be slow, as well as extremely perilous, to a vessel of any type.

Mr. A. P. Low, in his official "Cruise of the Neptune," page 292, says: "the navigation of Hudson Straits would be possible for ships 'specially constructed for ice navigation' but 'the voyage

would be a long one, and the difficulties and dangers would be great."

Assuming then that only vessels of special construction, built and operated by Government, would be required—as was definitely decided by the late Hon. Frank Cochrane, when Minister of Railways and Canals between 1911 and 1917, after sending several expeditions to Hudson Straits to investigate the conditions—the next question is as to the number and cost of such vessels.

While earlier investigations led to the conclusions that 2,000 tons would be the limit of a vessel capable of being operated in Hudson Straits, it is now claimed that 7,000 ton ships could be used. Without arguing the matter, two points are at once indicated:—

1.—That, since a 7,000 ton vessel can carry no more than 264,000 bushels, and could make but two round trips, therefore 46 such vessels would be required to move 24,500,000 bushels.

2.—The cost of 46 steamers of special construction, capable of resisting ice pressure, would be not less than \$70,000,000.

In an earlier part of this analytical review, the cost of ships was placed at \$20,000,000. That figure was used tentatively, and was not meant to be considered in any other sense.

Conclusions:

An honest effort has here been made to bring together many of the essential and controlling facts bearing on this Hudson Bay Railway problem. The reader must be equally honest in coming to a decision in his own mind as to whether or not, in the face of all the information that has been presented, it would be reasonable to expect that the Hudson Bay route could lower transportation tolls on export wheat, or that it could render a service which would help the wheat situation in the slightest degree.

In an editorial which appeared in *Railway Age* on 14th November last, Mr. Samuel O. Dunn, the editor, and one of the foremost authorities on transportation in the world, shows that he has made a thorough study of this Hudson Bay question. He goes into the

matter in all its economic bearings, and concludes a rather exhaustive analysis with this significant verdict —

"The Hudson Bay Railway is one of the most chimerical transportation projects ever conceived. The people of Canada would much better dump \$75,000,000 into Hudson Bay than carry it out. If it is carried out they will lose not only their original investment, but millions of dollars every year in addition. That the project is seriously advocated by anybody is a striking illustration of the fact that there is no subject upon which there is more false and even preposterous reasoning than concerning means of transportation and their relative advantages and costs."

If this were a proposition in steel making, whose judgment as to its merits would be sought? Certainly not a surgeon's. If it were a proposition in surgery, would the opinion of a steel-maker be regarded as final? We must therefore see that, since this is a problem in railroading and navigation, it can only be settled by men who are able to apply the appropriate economic tests.

The following conclusions are amply justified by the facts presented in this review:—

1.—That the completion of the Hudson Bay Railway would involve a total capital expenditure of not less than \$70,000,000. At 4 per cent, that would mean an annual fixed charge of \$2,800,000.

2.—That the earnings on 24,500,000 bushels of wheat—the maximum capacity of the road—plus a small volume of westbound traffic, both hauled at rates now effective, would not produce a gross revenue of more than \$1,728,241 per annum.

3.—That the operating expenses would be 80 per cent higher than on other railways in Canada, and could not possibly fall below \$8,000,000 per annum.

4.—That operating expenses, amounting to at least \$5,000,000 per annum would be incurred while the road was lying idle.

5.—That great difficulty would be encountered in organizing an operating and administrative staff for two or three months each year. In most cases, annual salaries and wages would have to be paid. That was what happened when part of the Hudson Bay Railway was in operation.

6.—That the annual loss on the road, without reducing present freight rates, would exceed \$8,000,000 per annum, including fixed charges.

7.—That the closing of Hudson Straits on 20th October would absolutely prevent the moving of more than five per cent of a normal season's crop.

8.—That ice conditions in Hudson Straits would compel the use of ships of special design and construction, at a capital cost of more than \$70,000,000.

9.—That the loss on the operation of the ships would probably exceed \$5,000,000 per annum.

10.—That all the conditions under which both the railway and the ships would be operated are so abnormal and unparalleled; that the service which could be rendered would be small and could not favorably affect the western situation as to export wheat; that nothing but disappointment and heavy loss could follow an attempt to operate such an extraordinary agency of transportation.

J. L. PAYNE.

OTTAWA, January 25th, 1926.

